INFANT FEEDING CHOICES AND PRACTICES OF HIV-POSITIVE MOTHERS AT LOWER UMFOLOZI DISTRICT WAR MEMORIAL HOSPITAL, EMPANGENI, KWAZULU-NATAL PROVINCE

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DECLARATION:

I, **ABUSOMWAN Osaigbovo Ebenezer**, declare that this research report is my own work. It is being submitted for the degree of Master of Public Health in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at this or any other University.

Signature: ----------

Date**:** **.....**

DEDICATION:

This research project is dedicated to my parents: Chief Daniel Osaretin Abusomwan and Mrs Grace Esohe Abusomwan; and siblings; my wife: Mrs Becky Esohe Abusomwan and my son: Master Osaze Raymond Abusomwan.

ABSTRACT

Introduction:

KwaZulu-Natal is one of the provinces most affected by HIV/AIDS in South Africa. The estimated HIV prevalence among pregnant women attending ante-natal clinic at LUDWMH in Empangeni is high (40%). Infant feeding practices by these mothers are critical to reducing MTCT of HIV. The objectives of the study are: to describe the ante-natal infant feeding choices of a group of HIV-positive women attending the PMTCT clinic at LUDWMH; to determine the infant feeding practices of these women during the six weeks post-natal period; to determine the correlation between these mothers' infant feeding choices and their actual infant feeding practices six weeks after childbirth; to describe these women's socio-environmental conditions; and to determine the compliance of their infant feeding practices to safe infant feeding guidelines.

Materials and methods:

A descriptive cross-sectional study design was used. The mothers were from the predominantly poor-rural communities in Area 3 of northern KwaZulu-Natal. Data were obtained by the use of structured questionnaires which were directly administered to 395 mothers attending the PMTCT clinic six weeks after childbirth. Their ante-natal clinic records were also reviewed. Data entry was done with Microsoft Access. The data were analysed using Epi Info and Microsoft Excel.

Results:

The commonest ante-natal infant feeding choice was exclusive breastfeeding (78.2%) which was more than the combined number of women who chose replacement feeding (19.2%) and mixed feeding (2.5%). Majority of the mothers practiced their infant feeding choices in the six weeks post-natal period (p-value = 0.000). Expectedly, access to regular maternal income was low (36.7%; 95% CI 32.0 – 41.7). However, access to the other three individual socio-environmental resources was high [safe water (66.8%; CI 61.9 – 71.4); fuel (83%; CI 79.0 – 86.6); fridge/freezer (82.5%; CI 78.4 – 86.1)]. Approximately 61% of women had access to all three of these resources (cumulatively).

Discussion and conclusions

The study demonstrated that exclusive breastfeeding is the predominant infant feeding choice and practice amongst women attending LUDWMH, Empangeni in KwaZulu-Natal province. The high uptake of exclusive breastfeeding (77.7%) in the six weeks post-natal period is encouraging given the heavy burden of diarrhoeal diseases and protein-energy malnutrition with associated high mortality rates in this setting. Another encouraging finding that may help to improve prevention of MTCT of HIV was that mixed feeding was uncommon in these women. The finding that almost two-thirds of mothers who practiced replacement feeding complied with WHO/National guidelines for safe replacement feeding in this largely poor-rural setting is commendable.

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LIST OF ABBREVIATIONS:

- **3TC** Lamivudine
- **AFASS** Acceptable, feasible, sustainable and safe
- **AIDS** Acquired Immunodeficiency Syndrome
- **ARV** Antiretroviral
- **CCMT** Comprehensive, care, management and treatment
- **HIV** Human Immunodeficiency Virus
- **LUDWMH** Lower Umfolozi District War Memorial Hospital
- **NVP** Nevirapine
- **PCR** Polymerase Chain Reaction
- **VCT** Voluntary Counselling and Testing
- **ZDV** Zidovudine

CHAPTER 1: INTRODUCTION

1.1 BACKGROUND

Globally about 40 million people have been infected with HIV/AIDS since the first reported case in 1981 and roughly 17.5 million are women of child bearing age (UNAIDS,2005). About 70% of the women who are HIV-infected are in sub-Saharan Africa and it is especially the young adults who are most vulnerable (UNAIDS 2005). Women bear a disproportionate burden of the disease, and, in many instances, continue to experience unacceptably high rates of new HIV infections and mortality. The high HIV burden amongst women of reproductive age has had a negative impact on children. From the beginning of the HIV pandemic through 2002, 4 million children under 15 years of age worldwide became infected with HIV (UNAIDS, 2003). An estimated 370,000 children younger than 15 years became infected with HIV in 2007 and, more than 95% of these HIV-infected infants and younger children contracted the infection through their mothers (UNAIDS, 2008) .

This mother-to-child transmission (MTCT) can occur during pregnancy, labour, delivery and breastfeeding (McIntyre, 1997). The rates of HIV transmission through breast milk are variable, calculated in studies in Africa as between 12-43% (Bobat et al., 1997; Gray et al., 1996). Also, DeCock et al., (2000) and Gaillard et al., (2004) report that close to 20% of infants of HIV-positive mothers may acquire the infection through breastfeeding, depending on the duration of breast feeding and exposure to other risk

factors. This means a significant amount of MTCT of HIV could be attributable to breastfeeding. MTCT thus presents a major threat to the gains in child health due to several national and international preventative programmes.

A significant amount of MTCT can however be prevented with antiretroviral (ARV) agents (Leroy et al., 2003). Other strategies for reducing peri-natal MTCT include: obstetric interventions and safe infant feeding practices for babies exposed to HIV (Coutsoudis et al., 2001; Coovadia et al., 2007; Iliff et al., 2005). The relative efficacies of anti-retroviral regimens and obstetric interventions are well documented based on clinical trial findings (Lallemant et al., 2004).

At the time of this study, the World Health Organisation (WHO) recommendation on infant feeding to prevent postnatal transmission of HIV was that when replacement feeding is acceptable, feasible, affordable, sustainable and safe (AFASS), breastfeeding by HIV-positive mothers should be avoided. Otherwise, exclusive breastfeeding was recommended during the first few months of life (WHO, 2000). The recommendation further states that early cessation of breastfeeding should be encouraged as soon as feasible taking into account local circumstances and the risk of replacement feeding including infections other than HIV and malnutrition; and that when HIV-positive mothers choose replacement feeding, they should be provided with specific guidance to make their choice safer (WHO, 2000). According to these guidelines, the socio-environmental conditions considered necessary for safe replacement feeding included: access to clean water, a refrigerator,

fuel/electricity/gas/paraffin, and a regular maternal income. However, optimal replacement feeding for HIV-positive mothers as well as the necessary support for successful implementation were key challenges especially in resource-constraint settings.

These WHO infant feeding recommendations for HIV-positive mothers largely form the bases for the South African National Department of Health policy on infant and young child feeding which has been wholly adopted by the KwaZulu-Natal Provincial Department of Health (DOH, 2007). This policy requires that all HIV-positive women be counselled on infant feeding options at every ante-natal clinic visit. For each woman, the AFASS criteria should be carefully assessed and discussed. The woman should then be assisted and supported to make an infant feeding choice that would be most appropriate for her individual situation. The policy also states that women who choose formula-feeding should receive at least a two-week supply of free commercial formula upon discharge. Thereafter, formula should be dispensed at the local clinic monthly, for a period of six months. And the amount would be calculated per age category (DOH, 2007). This was the policy in place at the time of this study.

The World Health Organisation (WHO) published updated guidelines on HIV and infant feeding in October, 2006. However, the general principles underpinning the 2000 recommendations, that HIV-infected women should exclusively breastfeed their infants in the first six months of life unless replacement feeding is acceptable, feasible, affordable, sustainable and safe,

were upheld (WHO, 2006). These guidelines were further updated in 2009 to recognise the impact of antiretroviral (ARV) treatment during breast-feeding. Unlike the 2006 guidelines which recommend individual counselling for women to help them choose their feeding method, the 2009 update recommends that in countries where breastfeeding is the safest infant feeding option, in view of high infant mortality rates from diarrhoeal diseases and malnutrition, HIV-positive mothers should be encouraged to breastfeed their infants for a minimum period of 12 months and give appropriate ARV prophylaxis (WHO, 2010). Essentially, countries are to choose and implement only one of two options in their health services: either breastfeeding and ARV, or complete avoidance of breastfeeding. The AFASS criteria for replacement feeding still apply if they choose the latter (WHO, 2010).

In light of the 2009 WHO infant feeding guidelines the South African Department of Health introduced new guidelines which came into effect in January 2011. These recommend ARV and exclusive breastfeeding by HIV-positive mothers and abolish the provision of infant formula in health services. The KwaZulu-Natal Provincial Department of Health has implemented these new guidelines.

1.2 STATEMENT OF THE PROBLEM

The choice of infant feeding method is critically important for HIV-positive mothers. For example, formula feeding may potentially expose the infant to unacceptably high risks of diarrhoea and malnutrition, which are leading

causes of child mortality in South Africa; while breastfeeding may expose the infant to high risk of MTCT of HIV through breast milk (Coutsoudis et al., 2002). Expectant mothers thus require relevant and appropriate information to make informed infant feeding choices. However, research work done in Southern Africa reveals that counsellors do not always present clear, impartial messages on infant feeding options and on appropriate, acceptable feeding practices (Chopra et al., 2002; Chopra et al., 2005).

The availability of short course anti-retroviral drugs through the PMTCT programme has been shown to increase the potential for prevention of HIV transmission in pregnancy, during labour and delivery. However, this does not solve the peculiar problems of breast-milk transmission of HIV. The challenge of lowering MTCT through low risk infant feeding choices and practices by HIV-positive mothers still remains, especially in settings where breastfeeding is the dominant infant feeding choice, and where universal coverage of highly active ARV therapy (HAART) for pregnant women is still not feasible (Coovadia et al., 2007).

Hence, this study examined the antenatal infant feeding choices and immediate post-delivery infant feeding practices of HIV-positive mothers attending the postnatal clinic at the Lower Umfolozi District War memorial Hospital in Empangeni, KwaZulu-Natal province.

1.3 JUSTIFICATION FOR THE STUDY

The more strictly HIV-positive mothers are able to breastfeed exclusively with early cessation especially in poor-resource settings, the lower the chances of HIV infection and mortality in their infants (Iliff et al., 2005). The prime obstacle to the success of infant feeding programmes lies in the fact that mixed feeding patterns and not exclusive breastfeeding are practised through out Africa (Bland et al., 2002). Therefore, the infant feeding choices that HIV positive mothers make, as well as their transition to actually putting these infant feeding choices into practice require to be documented, with continuous monitoring and evaluation. This study does just this, by providing data on the extent to which HIV positive women practice infant feeding methods that comply with WHO and national infant feeding guidelines. These data may help to access the likelihood of infant feeding practices contributing to successful prevention of MTCT in this setting.

Although, several studies in diverse contexts have documented poor adherence to recommended infant feeding methods, there is very limited empirical and site-specific evidence on this in various South African settings, including Kwa-Zulu-Natal (de Paoli et al, .2002; Isiramen et al., 2002; Shapiro et al., 2003). Also, research efforts linked to prevention of MTCT of HIV programmes have largely been focused on clinical and nutritional perspectives, while HIV-positive mother's infant feeding choices and practices are yet to be sufficiently explored and evaluated.

In KwaZulu-Natal, one of the provinces most affected by HIV/AIDS in South Africa, the estimated HIV prevalence among antenatal clinic attendees in 2007 was 37.4% (DOH, 2007). As part of the provincial PMTCT programme In KwaZulu-Natal, free infant formula is given to HIV-positive mothers who choose replacement feeding. However, it is yet to be evaluated whether these women have the resources required to prepare replacement feeds in an acceptable, feasible, affordable, sustainable and safe manner – as defined by the AFASS criteria. Given the high HIV prevalence of HIV in this province and thus the high potential for MTCT of HIV, it is important to document the antenatal infant feeding choices of HIV-positive mothers, determine whether their choices correlate with actual feeding practices post-delivery, and ascertain whether postnatal practices are appropriate to the women's socioeconomic situations and consistent with the United Nations AFASS recommendations.

1.4 LITERATURE REVIEW

The magnitude of the problem of MTCT and prospects and possibility for prevention has made prevention of MTCT (PMTCT) an essential component of the worldwide HIV/AIDS control strategy (WHO, 2003).

Various strategies are available for reducing peri-natal MTCT. Prophylactic ARV regimens are available and effective; for example, maternal short course zidovudine (ZDV) or a combination of ZDV and lamivudine (3TC) with single

dose nevirapine (NVP) have been shown to significantly reduce rates of MTCT of HIV to <2% in non-breastfeeding settings and to 6-9% in settings where mothers choose to breastfeed their infants (Leroy et al., 2003). It is now known based, on a recent study that all regimens of HAART when administered during pregnancy and up to six months post-natal period can result in high rates of HIV suppression with an overall rate of MTCT of 1.1% (Shapiro et al., 2010).

Other strategies for reducing peri-natal MTCT include: obstetric interventions such as elective caesarean section before onset of labour and rupture of membranes (Ioannidis et al., 2001) and the use of antiseptic or antiviral agents to cleanse the birth canal during labour and delivery especially in women with prolonged duration of ruptured membranes (Biggar et al., 1996; Gaillard et al., 2001). The relative efficacies of anti-retroviral regimens and obstetric interventions are well documented based on current clinical trial findings (Lallemant et al., 2004).

Safe infant feeding is also an option for prevention of MTCT of HIV. The documentation of research findings that exclusive breastfeeding is associated with a lower risk of MTCT of HIV than mixed feeding have raised expectations that MTCT can be reduced even where breastfeeding is culturally normative (Coutsoudis et al., 1999; Iliff et al., 2005).

Safe and cost-effective interventions to curb MTCT of HIV form the core of the South African Comprehensive Care, Management and Treatment of HIV/AIDS

(CCMT) programme, and the national strategic plan for HIV/AIDS and STIs (DOH, 2007). The CCMT programme recommends the provision of infant formula to HIV positive mothers who choose not to breastfeed their infants. The translation of infant feeding recommendations into practice is however often very challenging and cumbersome. Most HIV-positive mothers find it difficult to consider and balance the risks and benefits of the available infant feeding options, especially where access to safe replacement feeding and support is limited (Piwoz et al., 2005).

Exclusive breastfeeding has been observed to be an alien concept in many African cultures, and the prevailing form of infant feeding worldwide is mixed feeding – a combination of breast milk and replacement feeding (Magoni et al, 2005; WHO, 2001). Research from various countries in sub-Saharan Africa has documented breastfeeding initiation rates of about 90% amongst rural women of unknown HIV status (Bland et al., 2000; de Paoli et al., 2001). However, exclusive breastfeeding is rare while early mixed feeding is common (Becquet et al., 2005b; Coutsoudis et al., 2005).

Studies in Cote d'Ivoire, India, and Zambia show that not all women who have been counselled about early cessation of breastfeeding actually carry it out in practice (Becquet et al., 2005; Shankar et al., 2005; Thea et al., 2004). Data from Mozambique, and Zimbabwe suggest that even with adequate and proper counselling on appropriate feeding methods, after six months, many women feel they are not able to meet their infants' nutritional energy and micronutrients needs with available foods in the absence of breastfeeding –

and so they often practice mixed feeding (Johnson et al., 2006; Humphrey et al., 2005).

The Mashi study in Botswana, where the Ministry of Health (MOH) recommends formula feeding to HIV-positive mothers and where milk formula is made available free of charge by the government, reported very high levels (91%) of adherence to formula feeding compared to only 18% adherence to exclusive breastfeeding (Thior et al., 2005).). However, a study from South Africa found that women of unknown HIV status who initially chose to exclusively breastfeed their infants gradually introduced replacement feeding from about one to three months of life (Chopra et al., 2000). Also, Bland et al., (2000) note that fluids are commonly introduced within the first 48 hours of life, and infant formula feeding from six to eight weeks after birth and, that mothers tend to view formula as more beneficial to their infants.

HIV positive mothers' adherence to their initial infant feeding choices varies. Thior et al., (2005) report very high levels (about 91%) of adherence to formula feeding compared to only 18% adherence to exclusive breastfeeding. A study in Zambia reveals a huge gap between infant feeding choices and actual practices; HIV-positive mothers opted for mixed infant feeding very early, irrespective of whether they initiated replacement feeding or exclusive breastfeeding (Omari et al., 2000). A Cote d'Ivoire study, in contrast, found that 69% of HIV-positive mothers who initiated replacement feeding reported doing so successfully at three months (Leroy et al., 2002).

There is evidence that exclusive breastfeeding for the first 6 months may reduce the risk of obesity, chronic diseases such as cardiovascular disease and cancer as well as improved cognitive and intellectual capabilities later in life (WHO, 2004). Coutsoudis et al., (1999) demonstrated that the immunologic, antibacterial, and antiviral properties of breast milk in HIV-positive women who do not have AIDS are similar to those of HIV-negative women. Exclusive breastfeeding protects the integrity of the intestinal mucosal and is also found to be associated with fewer breast health problems such as mastitis and breast abscesses and thereby reduces the risk of MTCT of HIV (Coovadia et al., 2007; Iliff et al., 2005). Whereas, ingestion of contaminated water which may occur in the process of replacement or mixed feeding can lead to damage to the gut mucosal and disruption of the immune barriers. Bacteria and other pathogens may be introduced into the gut resulting in inflammatory responses leading to increased risk of MTCT of HIV (Coutsoudis et al., 2001). Similarly, a recent review showed that infants were more likely to die of diarrhoeal diseases and pneumonia in low resource areas (Horvath et al., 2010).Whereas formula-fed infants are less likely to become HIV-infected at one month, they are six times as likely to die by 12 months compared to breast-fed infants (Kagaayi et al., 2008).

The adoption of safe infant feeding practices is an important challenge for PMTCT. The cultural inclination towards prolonged breastfeeding in most of sub-Saharan Africa makes the adoption of early weaning or cessation by HIV positive women quite difficult (de Paoli et al., 2001; Isiramen et al., 2002; Shapiro et al., 2003; Williams et al., 2001). A study conducted in rural

KwaZulu-Natal found that despite the implementation of the Baby-Friendly Hospital Initiative (BFHI) in the province, uptake of exclusive breastfeeding remains a huge challenge (Bland et al., 2002).

A prospective cohort study conducted in three sites in South Africa (Paarl, Rietvlei and Umlazi) implementing the PMTCT programme found that infant feeding practices were at variance with national and international recommendations on infant feeding (Doherty et al., 2006). The study revealed that even where breastfeeding is culturally the norm, putting into practice the various recommendations on infant feeding, including exclusive breast-feeding, could be daunting for women. This further corroborates the need for on-going research on PMTCT programme implementation and evaluation of infant feeding choices and practices by HIV-positive mothers as this is crucial for consolidating the overall gains of PMTCT programmes.

1.5 STUDY OBJECTIVES

1) To describe the antenatal infant feeding choices for a group of HIV-positive women at the Lower Umfolozi District War Memorial Hospital (LUDWMH), Empangeni, KwaZulu-Natal province;

2) To determine the infant feeding practices of these women during the first six weeks after childbirth;

3) To determine the correlation between these mothers' infant feeding choices and their actual infant feeding practices in the first six weeks after childbirth;

4) To describe these women's socio-environmental conditions at home (access to clean water, a refrigerator, source of energy, and regular income);

5) To determine the compliance of the infant feeding practices of HIV-positive mothers to safe infant feeding guidelines.

CHAPTER 2: METHODOLOGY

2.1 STUDY DESIGN

This was a descriptive cross-sectional study of a sample of HIV-positive mothers attending the PMTCT clinic at LUDWMH for a follow-up visit at six weeks postnatal. The study included antenatal clinic record reviews to determine antenatal infant feeding intentions of these mothers, and the use of questionnaires which were directly administered to the participants in order to determine their infant feeding practices 6 week postnatal and their socio-economic and environmental conditions at home.

2.2 STUDY SETTING

The study was carried out in LUDWMH over a period of three months between February and April, 2010. LUDWMH is located in Empangeni which is in the north coast of KwaZulu-Natal. It provides both general as well as specialised maternal and neonatal services in Area 3 which comprises three health districts namely: Uthungulu, Zululand, and Umkhanyakude. The area has a total population of about 2,226,459 people and a total of 21 hospitals and over 133 fixed clinics. From the in-hospital clinical audit in 2008, LUDWMH had about 10,000 deliveries per year with an average hospital HIV prevalence rate of about 40% (KZN Health, 2009).

The PMTCT programme was integrated into the maternal health care at the hospital. All pregnant women attending the antenatal clinic had to undergo group information sessions and were offered voluntary counselling and testing (VCT) for HIV. Those who tested positive were offered prophylactic antiretroviral treatment for PMTCT; and were also counselled on infant feeding options and encouraged to make free and fully-informed choices that were best suitable to their situations. The AFASS criteria was used as a tool to provide individual and unbiased counselling to the mothers on infant feeding options to enable them make informed choices on the infant feeding option most suitable to their peculiar circumstances. The counselling included review of the mothers' access to safe water, fuel, fridge/freezer and regular maternal income.

Exclusive breastfeeding was recommended for the first six months of life unless replacement feeding was acceptable, feasible, affordable, sustainable and safe for them and their infant. The mothers who chose replacement feeding were provided free commercial milk formula for up to six months after delivery. They returned for post-natal visits at 6 weeks and their babies were screened for HIV with the PCR test. The average monthly number of HIV-positive mothers seen at the post-natal clinic was 400.

2.3 STUDY POPULATION AND SAMPLING

The study population comprised of all HIV-positive mothers participating in the PMTCT programme and attending the postnatal clinic at LUDWMH. The study

sample was planned to be large enough to ensure assessment of a significant proportion of HIV-positive mothers attending the clinic over the study period. A pre-review of PMTCT clinical records in LUDWMH revealed the prevalence of breastfeeding choice amongst HIV-positive women to be about 5%. Assuming a similar prevalence in this study, at a precision of 5% - to achieve 95% confidence interval; the study required a sample size of at least 385 women.

Systematic sampling was done to recruit the required sample of women. There were two PMTCT clinic sessions each week and the clinic kept appointment schedules with lists of mothers booked for each post-natal visit. Since the monthly clinic turnover was an average of 400, to achieve the required 385 number of women over the data collection period of 3 months, every third woman on each of the clinic lists was selected for inclusion in the sample. Women were recruited to participate in the study after giving informed written consent while those who declined to give their consent to participate were not recruited in the study. The actual sample recruited was 395.

2.4 MEASUREMENT

The measurement tools in the study included a questionnaire with both open and closed–ended questions, and which included a section to extract data from the antenatal PMTCT register. The questionnaires were translated from English into Zulu which is the predominant local language. Three Zulu-speaking nursing students were recruited and trained to act as language translators and also to administer the questionnaires by interview.

An English questionnaire was developed and translated into Zulu by the three trained Zulu-speaking research assistants. The translated Zulu version of the questionnaires was also discussed with Zulu-speaking nurses at LUDWMH, to ensure correct use of terminologies and increase validity of the questionnaire. The interviews were conducted in Zulu and responses were later translated to English. To optimise reliability, the questionnaire was largely structured and the research assistants were familiarised with the objectives of the study and provided with basic training on administration of questionnaires.

Women who agreed to participate in the study were asked for permission to view their antenatal clinic records (PMTCT register). The PMTCT register was developed by LUDWMH and included data on the mother's antenatal infant feeding choice. The appropriate registers were identified by using the file number on the infant's road-to-health card, which corresponded to the PMTCT register number. The registers were reviewed to collect data on the infant feeding choice (intentions) that each participating woman made during the antenatal clinic period.

Data on the following variables were collected:

1. Demographic profile: age, marital status, educational status, employment status;
2. Parity of the mother;
3. Antenatal infant feeding choices: the categories of antenatal feeding choices included exclusive breastfeeding, replacement feeding, mixed

feeding and undecided. These data were verified with the antenatal clinic register;

4. Current infant feeding practices in the first six weeks postnatal. The options included exclusive breastfeeding, replacement feeding and mixed feeding;
5. Socio-environmental conditions of these mothers. These refer to access to safe water, working refrigerator, fuel for boiling water (electricity/gas/paraffin), and regular source of household income which are considered necessary for safe replacement as defined by WHO.

The WHO (2000) infant feeding definitions were applied throughout the study, as follows:

Replacement feeding: feeding infants who are not receiving breast milk with a diet that provides all the essential nutrients until the age at which they can fully tolerate family foods. A suitable commercial formula is used as replacement feeding in the first six months of life.

Commercial formula: this refers to a commercial product that meets the applicable codex standard for infant formula, follow-up formula and infant or follow-up formula for special dietary or medical purposes.

Exclusive breastfeeding: this refers to feeding infants with only breast milk and no other liquids or solids, and not even water with the exception of drops or syrups consisting of vitamins, mineral supplements or medicines.

2.5 PILOT STUDY

The study was piloted amongst 35 Zulu-speaking HIV-positive women attending LUDWMH about two months prior to the research. The same facility was chosen for the pilot study in order to familiarise every member of the research team with the site and also try to estimate participation rates. The Zulu version of the questionnaires was used on the pilot study respondents which were administered by the research assistants, and the responses directly translated from Zulu into English. Thereafter responses were compared by reviewing the different responses obtained by each of the research assistants with the original English version of the questionnaires to ascertain whether they were properly and correctly transcribed. The pilot study was also used to test the relevance and suitability of the questions. There were no significant changes to the questionnaires after the pilot study.

2.6 LIMITATIONS

This study had the inherent limitations of using interviewer-administered questionnaires, as mothers could have under-reported their actual infant feeding practices at six weeks, especially if they are aware of the infant feeding guidelines, and that non-adherence to the guidelines may be risky for the child. This could potentially have introduced a social desirability bias.

Besides the socio-environmental factors – safe water, fuel, fridge/freezer and maternal income – other factors such as parity, disclosure of HIV status and maternal age and education could act as potential factors to determine infant

feeding choices and practices of HIV-positive mothers. These other factors were however not measured in this study.

2.7 ETHICAL CONSIDERATIONS

Approval for the study was sought and obtained from the University of the Witwatersrand Human Research Ethics Committee (Medical). The Permission to conduct the research at LUDWMH was granted by the management of the hospital and the KwaZulu-Natal Provincial Department of Health. Participants who were selected for inclusion in the study by sampling were first given information detailing the purpose of the study; what was expected of them as respondents, as well as risks and benefits of participating. The information was read and explained to them.

Women who agreed to participate were asked to give written informed consent (see Appendix B for consent form) after explanation of the consent form in simple and clear terms, including a request for consent to examine their antenatal clinic records. Only women who gave consent to participate in the interview were selected for inclusion in the study. The research ensured confidentiality by allocating a unique study number to each participant. No names or other identifiers were collected or captured on the questionnaire at any stage during the research and the study numbers were not linked back to any participant.

2.8. DATA PROCESSING AND ANALYSIS

Participants' responses to the questionnaires were coded, and data entry was carried out using Microsoft Access while Epi Info and Microsoft Excel were used for data analysis. Descriptive statistics were used to summarise the data. Proportions were used for categorical data (antenatal infant feeding choices, actual postnatal feeding practices, status of socio-environmental conditions). Proportions were also used to determine:

- The % of women who changed feeding option between antenatal and at six weeks postnatal period;
- The % of women practicing replacement feeding who actually had the socio-environmental resources considered necessary for safe replacement feeding (these include access to safe water, a refrigerator, fuel for boiling water (electricity, gas or paraffin) and a regular maternal income); and
- The proportion of women whose infant feeding practices complied with safe national infant feeding guidelines.

Other descriptive statistics such as mean and median were used to describe the numerical data (age of the mothers). The antenatal feeding choices and the actual infant feeding practices in the first six weeks of the baby's life as well as the infant feeding practices at six weeks and access to socio-environmental conditions were compared using the chi-square test as a measure of association.

CHAPTER 3: RESULTS

This chapter presents the results of the study conducted at Lower Umfolozi District War Memorial Hospital between April and June 2010. The data presented in this chapter describe the socio-demographic profile of a sample of HIV-positive mothers attending the PMTCT clinic of the hospital. The data further describe the antenatal infant feeding choices of women in the sample, the actual infant feeding practices of these women six weeks postnatal, and the extent to which women who chose replacement feeding had the prerequisite socio-environmental conditions for safe replacement feeding. The last section of this chapter evaluates the extent to which mothers' infant feeding practices after delivery correlate with the infant feeding choices they made in the antenatal period; and comply with guidelines for safe infant feeding. The results are reported using table and graphs.

3.1: SOCIO-DEMOGRAPHIC PROFILE OF PARTICIPANTS

A total of 395 women were included in the study. The age of the women ranged from 14 to 49 years; and teenagers and young mothers aged 25 years and below accounted for 41.1% of the sample while the mean and median ages were 28.3 and 27 respectively. The results show that most women had received some formal education and only 4.1% had not. Amongst the 252 women with secondary education, majority (51.6%) had matriculation. About one-fifth had tertiary education compared to 13.2% with only primary education (Table 3.1).

Table 3.1

Socio-demographic Profile of Participants (N=395)

Age group	No.	%
<19	35	8.9
19-24	109	27.5
25-29	104	26.4
30-34	70	17.7
35-39	48	12.2
40-44	25	6.3
45-49	4	1.2
Educational status	**No.**	**%**
None	16	4.1
Primary	52	13.2
Secondary-No matriculation	122	30.9
Secondary-Matriculation	130	32.9
Post matriculation	75	19
Employment status	**No.**	**%**
Unemployed, not looking for work	60	15.2
Unemployed, looking for work	159	40.3
Unemployed, in school	56	14.2
Employed, permanent job	53	13.4
Employed, temporary job	50	12.7
Employed, casual worker	7	1.8
Self-employed	10	2.5
Marital status	**No.**	**%**
Single(never married)	267	67.6
Married	96	24.3
Widowed	13	3.3
Divorced	6	1.5
Separated	13	3.3

Although a large number of the women (295) were unemployed, 56 (19%) were currently in school. Out of the 120 (30.4%) women who were employed 53 (44.2%) had permanent job while 10 (8.3%) were self-employed. The never married, widowed, divorced and separated together accounted for up 75.7% of the women in the sample.

3.2: ANTENATAL INFANT FEEDING CHOICES

The commonest choice of infant feeding that women had made during the ante-natal period was exclusive breast feeding (78.2%). This was higher than the combined number of women who opted for replacement and mixed feeding (Table 3.2).

Table 3.2

Ante-natal Infant Feeding Choices

Feeding choice	**No.**	**%**
Exclusive breast feeding	309	78.2
Replacement feeding	76	19.2
Mixed feeding	10	2.5
Total	395	100

3.3: ACTUAL INFANT FEEDING PRACTICES

The results of the women's actual infant feeding practices 6 weeks after delivery are presented in Table 3.3. The data show that the distribution of actual infant feeding practices 6 weeks after delivery remained virtually the same as antenatal choices. The majority of the women (77.7%) were exclusively breastfeeding their babies 6 weeks after delivery; the percentage had declined by only 0.5% points compared to their ante-natal choice.

Mixed infant feeding was the least common practice amongst the mothers at six weeks postnatal period, accounting for only 3%.The number of women who practiced mixed feeding in the 6 weeks postnatal period had increased

by two compared with the antenatal choice. However, there was no change in the number of women who practiced replacement feeding compared to the ante-natal choice.

Table 3.3

Actual Infant Feeding Practices 6 Weeks Post-natal

Feeding practice	**No**	**%**
Exclusive breastfeeding	307	77.7
Replacement feeding	76	19.3
Mixed feeding	12	3
Total	395	100

3.4: COMPARISON BETWEEN ANTENATAL INFANT FEEDING CHOICES AND ACTUAL PRACTICES

A strong significant association was found between the mothers' ante-natal infant feeding choice and actual practice in the six weeks post-natal period (p-value=0.000) . Compliance with their antenatal infant feeding choice was high for both groups of women who during their antenatal period chose replacement feeding and exclusive breastfeeding as shown in table 3.4. In contrast, 60% of those women who chose mixed feeding during antenatal were practicing a different feeding method at six weeks post-natal. Almost all women who chose replacement feeding and exclusive breastfeeding were practising their chosen infant feeding method at six weeks post-natal. Table

3.4 presents the data on the extent of switching from feeding options chosen during the ante-natal period.

Table 3.4

Infant Feeding Choice and Actual Infant Feeding Practice 6 weeks Post-natal

	Actual infant feeding practice 6 weeks post-natal No. (%)		
Ante-natal infant feeding choice	**Replacement feeding**	**Exclusive Breast feeding**	**Mixed feeding**
Replacement Feeding (n=76)	71 (93.4%)	4 (5.3%)	1 (1.3%)
Exclusive Breastfeeding (n=309)	3 (1%)	299 (96.8%)	7 (2.3%)
Mixed feeding (n=10)	2 (20%)	4 (40%)	4 (40%)

P-value = 0.000

3.5: ACCESS TO SOCIO-ENVIRONMENTAL RESOURCES

Majority of the mothers had access to fuel (electricity/gas/paraffin) and fridge/freezer. Fewer women, though more than half of the sample, had access to safe water which was identified as piped water in the house or yard. Maternal income was the least accessible resource (Table 3.5).

Table 3.5

Women with Access to Individual Resources Necessary for Safe Replacement Feeding (N=395)

Resources	No.	% (95% Confidence Interval)
Safe water	264	66.8 (61.9 – 71.4)
Electricity, gas or paraffin	328	83.0 (79 – 86.6)
Fridge/freezer	326	82.5 (78.4 – 86.1)
*Mother as main income provider	145	36.7 (32.0 – 41.7)

*This was used as a measure of regular maternal income.

3.6: ACCESS TO INDIVIDUAL RESOURCES AND INFANT FEEDING PRACTICES

Overall, the majority of women who practiced replacement feeding had access to three of the four socio-environmental resources required for safe replacement feeding (Table 3.6). Safe water was the most readily accessible of the four individual resources while in most of the households where replacement feeding was practiced, the mothers were not the main source of income (Table 3.6).

Table 3.6

Actual Infant Feeding Practices 6 Weeks Postnatal and Access to Individual Resources Necessary for Safe Replacement Feeding

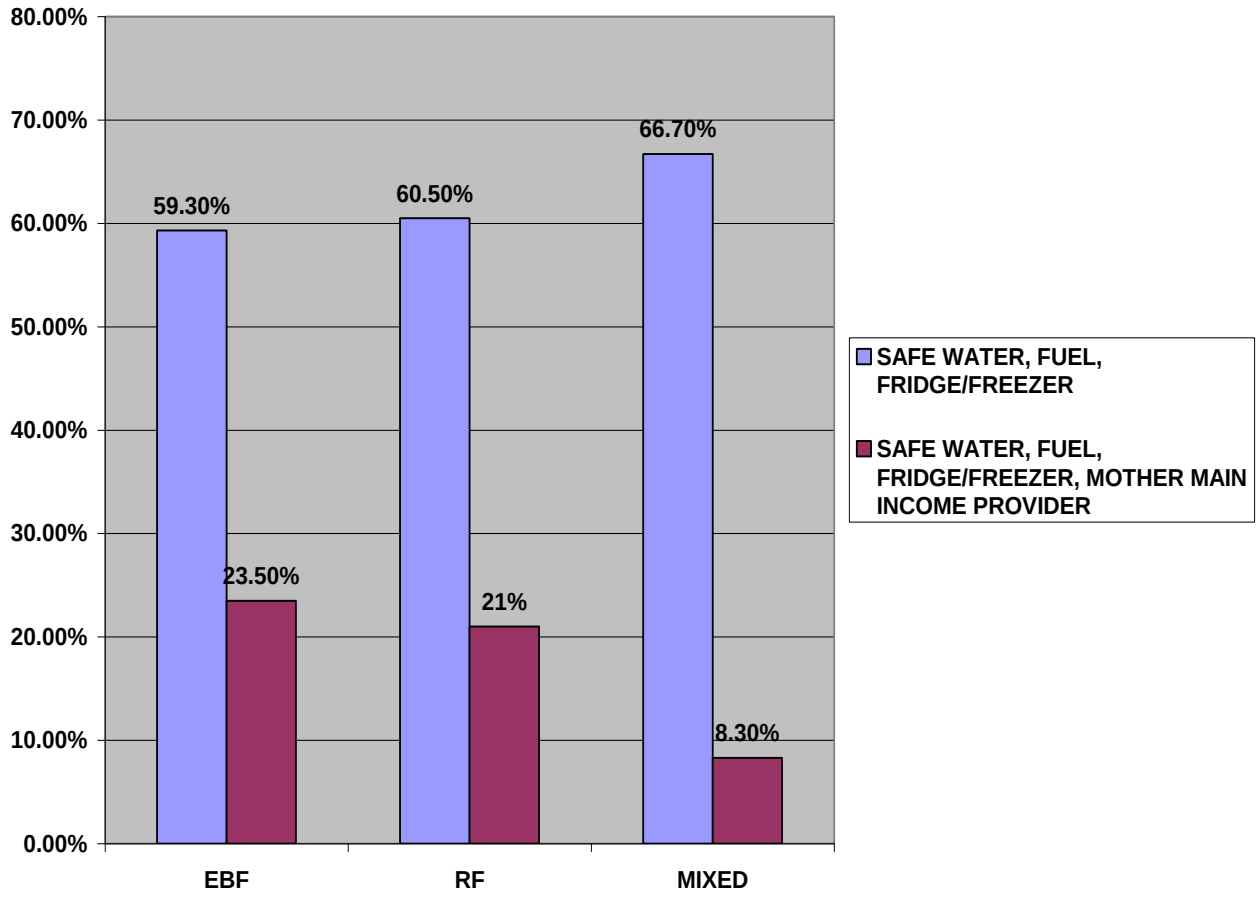
Individual resources	Exclusive breast feeding (n=307)	Replacement feeding (n=76)	Mixed feeding (n=12)	p-value*
Safe water	287 (93.5%)	70 (92.1%)	12 (100%)	0.17
Electricity, Gas or Paraffin	250 (81.5%)	67 (88.1%)	11 (91.7%)	0.06
Fridge/Freezer	251 (81.8%)	64 (84.2%)	11 (91.7%)	0.62
****Mother main income provider**	120 (39.1%)	23 (30.3%)	2 (16.7%)	0.06

* P-value <0.05 was used as statistical significance level.
** This was used as a measure of regular maternal income.

Although 100% of the mothers who practiced mixed feeding had access to safe water only 16.7% of these women were the main provider of household income. Majority of the women who practiced exclusive breast feeding had access to safe water, fuel and fridge/freezer which is similar to those who practiced replacement feeding. Although, mixed feeding was the least common infant feeding practiced by the mothers, most of them had access to safe water, fuel and fridge/freezer. There were no significant differences in the % of women with access to individual resources between the three different infant feeding groups (Table 3.6).

3.7: INFANT FEEDING PRACTICES AND ACCESS TO CUMULATIVE RESOURCES

Almost two-third of the mothers who practiced replacement feeding had access to safe water, fuel and fridge/freezer. However, only about one-fifth had access to the four socio-environmental resources including regular maternal income necessary for safe replacement feeding. The women who practiced exclusive breastfeeding had less access to the resources, excluding regular maternal income as shown in figure 3.7.



EBF- Exclusive breastfeeding**; RF**-Replacement feeding; **Mixed**-Breast milk + Formula

Figure 3.7: Infant feeding practice and access to cumulative resources.

3.8: COMPLIANCE WITH SAFE INFANT FEEDING GUIDELINES

According to WHO and national guidelines, exclusive breastfeeding is recommended for HIV-positive mothers for the first few months of life unless replacement feeding is acceptable, feasible, affordable, sustainable and safe. The AFASS criteria include access to the four socio-environmental resources – safe water, fuel, fridge/freezer and regular maternal income.

Majority of the women (77.7%) appropriately practiced exclusive breastfeeding as only 23.5% had access to all the four socio-environmental resources. Although amongst the women who practiced replacement feeding only 21% had access to all four resources, 60.5% of them had access to three of the resources besides access to regular maternal income.

CHAPTER 4: DISCUSSION

The aim of this study was to evaluate infant feeding choices and practices of HIV-positive mothers and to determine their compliance to safe infant feeding guidelines. This chapter discusses the results of the study, and the potential public health implications of the findings

The encouraging findings in the study include: firstly, most of the women chose exclusive breast feeding during the antenatal period and the majority of them practiced, in the six weeks post-natal period, the infant feeding option that they had selected during the antenatal period. Secondly, a fairly high proportion of the women who practiced replacement feeding had access to the required socio-environmental resources required for safe replacement feeding – just over 60% of them had access to three of the resources besides access to regular maternal income which could be considered as less important since these women were given free formula at the hospital. Thirdly, mixed feeding was uncommon amongst the women in this study. Lastly, the study indicates that most women practiced infant feeding methods that comply with safe infant feeding guidelines.

However, there are no significant associations between infant feeding practices in the six weeks post-natal period and access to the socio-environmental resources considered necessary for safe infant feeding practice by HIV-positive mothers. This means there was no difference in access to the required socio-environmental resources between women in the three infant feeding practice groups (exclusive breast-feeding, replacement

feeding, and mixed feeding). This suggests that there was no tendency for women to choose replacement feeding on the basis of access to the required resources.

4.1: ANTENATAL INFANT FEEDING CHOICES AND ACTUAL PRACTICES 6 WEEKS POST-NATAL

More than three quarters (78.2%) of the women attending the postnatal clinic had chosen – during their antenatal period – to practice exclusive breastfeeding after delivery; while only 2.5% chose mixed feeding – a combination of breast milk and replacement/formula feeding. In the six weeks post-natal period, exclusive breastfeeding was the commonest infant feeding method practiced by these mothers.

These findings are different from the observations in some previous studies undertaken in areas with similar HIV prevalence rates and rural settings. Becquet et al., (2005b) and Coutsoudis et al., (2002), in their research in Cote d'Ivoire and KwaZulu-Natal respectively, found that exclusive breast feeding is rare while early mixed feeding is common amongst HIV-positive mothers. Furthermore, the WHO (2001) reports that the prevailing form of infant feeding worldwide is mixed feeding.

The high level of exclusive breastfeeding practiced by the mothers in this study correlates well with the 95% breastfeeding initiation rate observed by Ross et al., (1983) and Ransome et al., (1989), although these studies were

done in the pre-HIV era. Bland et al., (2008) and Ghuman et al., (2009) showed that EBF rates in the HIV era are not so different. In their studies based in the KwaZulu-Natal province of South Africa, these authors reported high exclusive breastfeeding rates of 83% at three months and 96% at birth respectively. Similarly, Doherty et al (2009), in a study in rural KwaZulu-Natal, found high exclusive breastfeeding uptake (97%) at birth.

At a population level, exclusive breast feeding rates are reportedly lower. The national exclusive breastfeeding prevalence at 16 weeks post-natal in the general population is 12%, as described by the South African Demographic and Household Survey in 2003 (DOH, 2003). This is higher than the 6% found in a study done in an area of high HIV prevalence in rural KwaZulu-Natal (Bland et al., 2002).

The public health imperative, therefore, is to translate the high exclusive breastfeeding initiation rate in the immediate post-natal period into long term practice, at least up to six months. There is need for health care workers to continue to provide evidence-based information on HIV and safe infant feeding practice to mothers beyond the ante-natal and early post-natal period.

4.2: ASSOCIATION BETWEEN ANTE-NATAL INFANT FEEDING CHOICES AND ACTUAL PRACTICES

The study found very little variance between ante-natal choices and actual practices six weeks post-natally. This was only for replacement feeding and

exclusive breastfeeding methods because less than half of the mothers adhered to their ante-natal choice of mixed feeding. These findings are contrary to those by Thior et al., (2005) who reported very high levels (91%) of adherence to formula feeding compared to only 18% adherence to exclusive breastfeeding. In other work, Omari et al., (2000) revealed a huge gap between infant feeding choices and actual practices, including replacement and exclusive breastfeeding, in Zambia while Leroy et al., (2002) found 69% adherence to replacement feeding in Cote d' Ivoire.

It was beyond the scope of this study to establish factors that may promote and hinder women's adherence to their original infant feeding choices. Further research will be needed to determine these factors. However, given the design of the study – done at a health facility and based on self-reports - it is possible that some women may have over-reported their breast-feeding practice, and this may explain the high exclusive breastfeeding prevalence in the post-natal period in this study.

Nevertheless, based on this study, asking infant feeding choices of HIV-positive mothers at the antennal period may be worthwhile as it gives a fair indication of what the mothers will do when they go home. However, scaling up continued counselling and support to mothers is important in order to optimise and sustain safe infant feeding practices.

4.3: ACCESS TO SOCIO-ENVIRONMENTAL RESOURCES REQUIRED FOR SAFE REPLACEMENT FEEDING

It is gratifying to note that, unexpectedly, most of the women (60.5%) had access to three of the four socio-environmental conditions required for safe replacement feeding (fuel, freezer/fridge and safe water). However, as expected, in the majority of the households, the mothers were not the main providers of income. The challenge, however, is to continue to provide support to these mothers in order to optimise the benefits of safe replacement feeding. The mothers should be taught through individual demonstration how to safely prepare and use formula feeds. It is also important for the health care facility to sustain the free formula policy since majority of the mothers did not have access to regular income.

The data, however, also show that 39.5% of women were practicing replacement feeding despite not having access to the socio-environmental resources required for safe replacement feeding. This result demonstrates some of the complexities of counselling HIV-positive mothers on making the difficult decision to either exclusively breastfeed or to replacement feed as also observed by Bland et al., (2007). Infant feeding practices are optimised if mothers received consistent and accurate information concerning appropriate infant feeding not only from health care workers but also from family and community members (Morrow et al., 1999; Haider et al., 2000). It is a public health imperative that in settings where the criteria for safe replacement feeding are not met, mothers are given evidence-based counselling and

information on an individual basis in order to provide them with the resources to practice the most appropriate infant feeding option.

This study did not show any significant relationships between women's actual infant feeding practices and access to the socio-environmental resources considered necessary for safe infant feeding. This suggests that access to the required socio-environmental resources may not be a factor in determining women's infant feeding practices.

Besides access to socio-environmental resources, other factors may influence the infant feeding choices and practices of HIV-positive mothers. Coovadia et al., (2007) found that community-based support can lead to increased rates of exclusive breastfeeding and that such a strategy could be considered as a complement to facility-based counselling in order to sustain the practice of exclusive breastfeeding. Doherty et al., (2007) also showed that HIV status disclosure can be used as a measure of appropriateness for infant feeding choices and practices especially with regards to the acceptability component of the AFASS criteria.

Therefore, further study is needed to evaluate other possible determinants of infant feeding practices. This is necessary in order to develop health care facility-specific information that will be used to drive local infant feeding counselling and PMTCT programmes.

4.4: COMPLIANCE TO SAFE INFANT FEEDING PRACTICES

Most mothers in the study practiced exclusive breastfeeding in the six weeks post-natal period and majority who opted for replacement feeding had access to the requisite socio-environmental resources.

The National policy guidelines for feeding of infants of HIV-positive mothers recommend that health care workers who are working in resource-constraint communities with high incidences of child morbidity and mortality from malnutrition and diarrhoeal disease should encourage mothers to exclusively breastfeed except where there is absolute certainty that conditions for safe replacement feeding exist (DOH, 2007). Therefore, the fact that 77.7% of women in this study practiced exclusive breastfeeding is a positive finding. Exclusive breastfeeding has been identified as one of several necessary interventions for reduction of MTCT of HIV (Coutsoudis et al., 2001; Hoosen et al., 2007; Iliff et al., 2005). The high uptake of exclusive breastfeeding suggests that safer infant feeding practice can make significant contribution to prevention of MTCT of HIV in this setting.

Furthermore, since 60.5% of women practicing replacement feeding met the criteria for safe replacement feeding, suggests lower chances of morbidity and mortality related to unsafe replacement feeding in these children. As Garrib et al., (2006) in a study in northern KwaZulu-Natal demonstrated, diarrhoeal diseases and protein-energy malnutrition accounted for the top causes of child mortality in the area with an infant mortality rate of 67.5 in 2000–2002,

which was above the South African national average of 56.4 (Bradshaw et al., 2003).

Doherty et al (2011) noted that exclusive breastfeeding is the single most important strategy for reducing child morbidity and mortality associated with infectious diseases in both resource-rich and resource-poor settings particularly in the first months of life. Recent study from Malawi has also found that lack of exclusive breastfeeding was significantly associated with poor nutritional status as evidenced by decreased mean length-for-age, weight-for-age and weight-for-length Z-scores (Taha et al, 2010). Similarly, Coutsoudis et al (2001) and Iliff et al (2005) revealed that exclusive breastfeeding has a lower risk of MTCT of HIV compared to mixed feeding. Also, Coovadia et al., (2007), in an interventional cohort study to assess the HIV transmission risks and child survival, found that infants on mixed feeding at 14 weeks were almost twice as likely to be infected as exclusively breastfed infants. The study further demonstrated that the mortality in the first 3 months of life was about doubled in the infants who received replacement feeding compared with the exclusively breastfed infants. Obimbo et al., (2004), in a cohort study of HIV-infected infants in Nairobi, also showed that formula feeding was found to be a predictor of early infant mortality.

However, Doherty et al., (2007) found better outcomes amongst women intending to practice replacement feeding who had appropriate conditions and also noted that inappropriate infant feeding choices and practices are fairly widespread especially in contexts where formula is provided free.

Public health policy needs to achieve a critical balance between the need to reduce MTCT of HIV with the need to ensure child survival. In view of the need to reduce the public health burden of diarrhoeal diseases and protein-energy malnutrition and the associated high child mortality rates which have been observed in these poor rural communities, it could be argued that the high exclusive breastfeeding rate amongst the HIV-positive mothers found in the study is appropriate for this setting. This is an especially encouraging finding since the new infant feeding policy in South Africa focuses on breast-feeding plus ARV for mothers and babies (ref). The findings of this study indicate that adherence to the new guidelines will be high in the early post-natal period.

In discussing the findings of this study it is important to consider the following limitations and biases: one, the study was not community-based and, hence, findings can only be generalised to the participants of the PMTCT program at the health care facility; two, the study considered the infant feeding practices reported at six weeks post-natal period and cannot establish the long term infant feeding practice of the mothers; and three, the study did not evaluate the impact of HIV disclosure on the infant feeding choices and practices by the mothers.

CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

In conclusion, the study revealed that exclusive breastfeeding and not replacement feeding with infant formula or mixed feeding is the commonest infant feeding choice and practice of HIV-positive mothers at LUDWMH, Empangeni in KwaZulu-Natal province. Most of the women, in the six weeks post-natal period, practiced the infant feeding option they had selected during the ante-natal period – which in the majority of cases was exclusive breast-feeding.

The predominance of exclusive breastfeeding in the six weeks post-natal period is an appropriate infant feeding practice in view of the high infant and child mortality rates related to the heavy burden of diarrhoeal diseases and protein-energy malnutrition in this setting. It is also encouraging to note that majority of the women who practiced replacement feeding had access to most of the socio-environmental resources required for safe replacement feeding. These findings indicate that the majority of women practiced infant feeding methods in appropriate environments that comply with safe infant feeding guidelines.

In line with the findings of the study, the management of LUDWMH as well as the KwaZulu-Natal Department of Health should consider the following recommendations:

- Mothers should be encouraged to exclusively breastfeed their babies as this is in line with the recent WHO guidelines on infant feeding in the

context of HIV and in view of its mitigating impact on infant and child morbidity and mortality. This is also the most common infant feeding choice of the mothers attending this facility.

- However, effective breast-feeding education and support systems are needed to ensure mothers adhere to the new infant feeding guidelines beyond 6 weeks post-natal.

- Support further research projects to evaluate infant feeding practices beyond the six weeks postnatal period; and research to establish other factors that influence infant feeding preference in HIV positive women.

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APPENDIX A: QUESTIONNAIRE

Unique study No.		Clinic No.	

A: Socio-demographic data

1) Age (years) _____

2) Parity _____

3) What is your marital status?

Interviewer: do not read the list; circle the response given

3.1 Single (never married) ( )
3.2 Married ( )
3.3 Widowed ( )
3.4 Divorced ( )
3.5 Separated ( )

4) Which of the following best describes your current employment status?

Interviewer: do not read the list; circle the response given

4.1 Unemployed, not looking for work ( )
4.2 Unemployed, looking for work ( )
4.3 Unemployed, in school ( )
4.4 Employed, permanent job ( )
4.5 Employed, temporary job ( )
4.6 Employed, casual worker ( )
4.7 Self-Employed ( )

5) What is the highest level of education you have completed?

Interviewer: do not read the list; circle the response given

5.1 None ( )
5.2 Primary ( )

5.3 Secondary _ no matriculation ( )

5.4 Secondary – matriculation ( )

5.5 Post matriculation - tertiary ( )

B: Socio-environmental conditions

6) Please tell me, who is the main provider of your household income? ***Interviewer: do not read the list; circle the response/s given (there may be more than one response)***

6.1 Myself (the respondent; mother) ( )

6.2 Household member at home ( )

6.3 Household member, away, returns < monthly ( )

6.4 Household member, away, returns > monthly ( )

6.5 Other (specify): ( ) ……

7) Please what is the type of your house income?

Interviewer: do not read the list; circle the response/s given (there may be more than one response)

7.1 Wages/Salaries ( )

7.2 Profit from personal business/work ( )

7.3 Disability grant ( )

7.4 Child support grant ( )

7.5 Pension ( )

7.6 Other (specify) ( )……

8) What type of toilet do you and members of your households commonly use? ***Interviewer: do not read the list, circle the response given***

8.1 Flush ( )

8.2 Pit latrine/bucket ( )

8.3 Bush ( )

8.4 Other (specify) ( )……

9) Please tell me where do you get water for your household use?

Interviewer: do not read the list, but you can prompt to verify, and then circle the relevant response below

9.1 Piped indoors

9.2 Piped - in yard outdoors ( )

9.3 Piped communal tap ( )

9.4 Borehole ( )

9.5 Rain water tank ( )

9.6 River/stream ( )

9.7 Other (specify): …….

10) Please tell me, what is your source of fuel for boiling water at home?

Interviewer: do not read the list, circle the response given

10.1 Paraffin ( )

10.2 Electricity ( )

10.3 Gas ( )

10.4 Firewood ( )

10.5 Other ( ) (specify): ……

11) Do you have a working refrigerator in your home?

11.1 Yes ( ) skip to Q 13

11.2 No ( )

12) If you do not have a refrigerator, do you ever make use of someone else's refrigerator (e.g. a neighbour)?

12.1 Yes ( )

12.2 No ( ) skip to Q 14)

13) If you do make use of someone else's refrigerator, please tell me how often you use it, and what type of things do you store in the refrigerator?

……

……

……
……

C: Infant feeding practices since birth

14) How are you feeding your baby at the moment?

Interviewer: do not read the list, circle the response given

14.1 Formula ( )

14.2 Exclusive breastfeeding ( )

14.3 Mixed feeding ( ) (mixes breast feeding and other feeding)

Please explain the mixed feeding: ……

……

……

14.4 Other ( ) (please specify):

……..

……

……

.

15) Have you been feeding your baby in this same way since birth?

13.1 Yes ( )

13.2 No ( ) (go to Q 16)

16) If you have not been feeding the baby in the same way, please tell me about all the methods you have been using to feed your baby since birth:

……
……
……
……

17) For mothers using infant formula: please explain to me how you make the infant formula (probe: ask about the source of hot water)

……
……
……
……

END THE INTERVIEW AND THANK THE PARTICIPANT

D: Antenatal infant feeding choices

Instructions to data collector: please review the antenatal PMTCT register and extract the following data for this woman from the register:

18) Antenatal infant feeding choice recorded in the register (choice made by the woman during antenatal period):

18.1 Formula ( )

18.2 Exclusive breastfeeding ( )

18.3 Mixed feeding ( )

18.4 Undecided ( )

APPENDIX B

PARTICIPANT INFORMATION AND CONSENT FORM

Hello,

My name is

_____

I am working with a researcher from the Wits University School of Public Health on a study to evaluate infant feeding choices and practices.

What is involved in the study?

This research is aimed at finding out about the different ways women attending this clinic feed their babies, during the past 6 weeks after delivery. The research involves interviews with women who delivered in this hospital, as well as looking at the antenatal clinic records of these women.

Invitation to participate

You are kindly invited to participate in this study by helping us in answering some questions, which I will ask you using a questionnaire. Please give me your own opinions and experiences; there are no wrong or right answers. If you agree, we would also like your permission to look at your antenatal clinic record. The information you give us will hopefully add to help improve services for women and children.

Permission for this study had been sought and granted by the management of Lower Umfolozi District War Memorial Hospital (LUDWMH) as well as by the University of the Witwatersrand.

Participation is voluntary

Please also note that your participation is voluntary, which means only you can decide whether to participate, and nothing will be held against you if you choose not to participate. You will not be paid to participate in this study. You are free to decline to participate in the study, or to stop the interview at anytime, and nothing will be held against you if you do

Confidentiality

All information obtained during the course of this study, including hospital records, personal data and research data will be kept strictly confidential. Data that may be reported in scientific journals will not include any information that identifies you as a participant in this study

Ethical Approval

This study protocol has been submitted to the University of the Witwatersrand, Human Research Ethics Committee (HREC) and written approval has been granted by that committee.

The study has been structured in accordance with the Declaration of Helsinki (last updated: October, 2008), which deals with the recommendations guiding doctors in biomedical research involving human participants. A copy may be obtained from me should you wish o review it.

Contact details of Wits Ethics Committee

If you would like to report any complaints about the study or if you experience any problems you may contact the administrator and chairman of the University Research Ethics Committee (the people who allowed us to do this study):

The Secretary

Human Research Ethics Committee (Medical)

Wits University Research Office

Telephone: 011 7171234

Contact details of researcher

If you need any more information, or are not happy about the study, please contact:

Dr ABUSOMWAN, Osaigbovo Ebenezer

Lower Umfolozi District War Memorial Hospital, Paediatrics Department, Empangeni.

Tel; Cell: 0743034780, Fax: 0866019662, Email: osaebeabu@yahoo.com

CONSENT FORM

I hereby confirm that I have been informed by the study doctor; **ABUSOMWAN Osaigbovo Ebenezer**, about the nature, conduct, benefits and risks of this study.

I have also received, read and understood the above written information (Participant Information Leaflet) regarding the study.

I am aware that the results of the study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.

In view of the requirements of research, I agree that the data collected during this study can be processed in a computerised system by the researcher and his supervisor or on their behalf.

I may, at any stage, without prejudice, withdraw my consent and participation in the study.

I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.

PARTICIPANT:

Printed Name	Signature	Date and Time

APPENDIX C: ETHICS CLEARANCE CERTIFICATE

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

Division of the Deputy Registrar (Research)

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
R14/49 Dr Abusomwan O Ebenezer

CLEARANCE CERTIFICATE	**M090952**
PROJECT	Infacnt feeding Choices and Practices of HIV-Positive Mothers at Lower Umfolozi District War Memorial Hospital, Empangeni, Kwa-Zulu Natal Province
INVESTIGATORS	Dr Abusomwan O Ebenezer.
DEPARTMENT	School of Public Health/Community Health
DATE CONSIDERED	2009/10/02
DECISION OF THE COMMITTEE*	Approved unconditionally

Unless otherwise specified this ethical clearance is valid for 5 years and may be renewed upon application.

DATE 2009/10/02 **CHAIRPERSON** .....
(Professor PE Cleaton-Jones)

*Guidelines for written 'informed consent' attached where applicable

cc: Supervisor : Dr M Kawonga

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10004, 10th Floor, Senate House, University.
I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to a completion of a yearly progress report.**

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES...

.....